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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/635,357	08/06/2003	Hyun Rok Cha	U 014749-6	8874

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EXAMINER

MILLER, PATRICK L

ART UNIT PAPER NUMBER

2837

DATE MAILED: 07/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p align="center">10/635,357</p>	<p>Applicant(s)</p> <p align="center">CHA, HYUN ROK</p>	
	<p>Examiner</p> <p align="center">Patrick Miller</p>	<p>Art Unit</p> <p align="center">2837</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>08062003</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Karwarth et al

(6,384,554).

- With respect to claim 8, Karwarth et al disclose an apparatus and method for controlling a brushless dc motor that has a control unit (Fig. 8, #1104, grouping of devices 83, 93, 85, 87, 88, and 94) that predicts a phase commutation time of the polyphase ac power (Fig. 8, #82, prediction based on motor speed from #82) and controls an ignition time of an ignition phase current to be earlier than the phase commutation time (col. 1, lines 53-57). Specifically, the ignition current angle is preshifted to “fire” earlier than the commutation signal (col. 6, lines 25-33).
- With respect to claims 9 and 10, the phase commutation time is predicted using the operation information of the rotator (Fig. 8, prediction based on motor speed from #82).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawabata et al (6,479,956) in view of Karwarth et al (6,384,554).

- With respect to claims 1 and 8, Kawabata et al disclose an method and apparatus to control a brushless dc motor equipped with a rotator, the apparatus comprising: a converting unit to convert AC power to polyphase power and supply the polyphase ac power to the brushless motor (Fig. 1, #'s 2, 3, 4); a rotator operation detecting unit to detect operation information of the rotator (Fig. 1, #'s 8, 9).
- Kawabata et al do not disclose a control unit that predicts a phase commutation time of the polyphase ac power and controls an ignition time of an ignition phase current to be earlier than the phase commutation time. With respect to claim 5, Kawabata et al do not disclose all phase current of the polyphase ac power supplied to the motor, to be conducted during a period between the ignition time of the ignition phase current and the phase commutation time.
- Karwarth et al disclose an apparatus and method for controlling a brushless dc motor that has a control unit (Fig. 8, #1104, grouping of devices 83, 93, 85, 87, 88, and 94) that predicts a phase commutation time of the polyphase ac power and controls an ignition time of an ignition phase current to be earlier than the phase commutation time (col. 1,

lines 53-57). Specifically, the ignition current angle is preshifted to “fire” earlier than the commutation signal (col. 6, lines 25-33). Additionally, with respect to claim 5, controlling an ignition time of an ignition phase current to be earlier than the phase commutation time, when implemented in the commutation pattern of Kawabata et al (Fig. 2, (a)), would make all of the phase currents conducted during a period between the ignition time of the ignition phase current and the phase commutation time. The motivation to control the ignition phase current as described is to provide the advantage of providing the maximum current in a timely manner (col. 1, lines 55-57).

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to control the brushless dc motor of Kawabata et al so the ignition phase current “fires” before the phase commutation time, thereby providing the advantage of ensuring maximum current to the motor in a timely manner, as taught by Karwarth et al.
- With respect to claims 2 and 9, Kawabata et al disclose predicting the phase commutation time of the polyphase power using either operation information of the rotator (Fig. 1, #8, #9).
- With respect to claims 3, 4, 10, and 11, Kawabata et al disclose the operation information of the rotator is position information, where the position information is the zero crossing point detection of an ignition phase voltage (Fig. 1, output of #8 detects back-emf, which is indicative of position; col. 5, lines 63-65).
- With respect to claim 6, Kawabata et al disclose the converting unit comprises: a converter to convert the ac power to dc power (Fig. 1, #2); an inverter to convert the dc

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power to polyphase ac power (Fig. 1, #4); and a capacitor connected between the converter and the inverter (Fig. 1, #3).

- With respect to claim 7, the control unit controls the ignition time of the ignition phase current supplied to the motor by generating an inverter control signal and outputting the control signal to the inverter (Fig. 1, #6 generates signal to #4, which would not be the preshifted ignition phase current, as taught by Karwarth et al).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Miller whose telephone number is 571-272-2070. The examiner can normally be reached on M-F, 8:30-5:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on 571-272-2800 ext 41. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick Miller
Examiner
Art Unit 2837

pm
July 26, 2004


RINA DUDA
PRIMARY EXAMINER